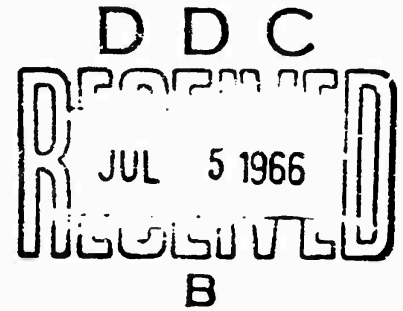


AD 634606

UNITED STATES MARINE CORPS  
Marine Corps Schools  
Quantico, Virginia 22134



46/4B/LJT:xps  
46-65-08  
21 June 1966

From: Coordinator, Marine Corps Landing Force Development Activities,  
Marine Corps Schools, Quantico, Virginia  
To: Commandant of the Marine Corps (Code AX), Headquarters, U. S.  
Marine Corps, Washington, D. C. 20380 (10)

Subj: CMC Project Directive 46-65-08, Test of Bumper Replacement Kit  
for Truck, Utility, 1/4-Ton, 4X4, M422/M422A1; Final Report

Ref: (a) CMC ltr A04H-pbw/3 of 14Oct65 (Project Directive 46-65-08)  
(b) CMCLFDA ltr 46/4B/LJT:ivg, 46-65-08 of 13Dec65  
(c) CG, 2dMarDiv ltr 4/A/WEM/jhh, 46-65-08 of 19Apr66 (NOTAL)

1. BACKGROUND. Reference (a) directed a test of the subject kit to determine lifting capability with standard Marine Corps slings, adequacy of hardware, and accuracy of installation instructions and drawings, prior to initiation of a retrofit program. Reference (b) requested assistance and forwarded the plan of test to Commanding General, 2d Marine Division. Reference (c) forwarded the test report to CMCLFDA.

2. PROCEDURE. The subject kit was tested by the Marine Corps Landing Force Development Center and the 2d Marine Division, FMF, in accordance with a test plan incorporating the instructions contained in enclosure (1) to reference (a). All specific tasks in the test plan were accomplished.

3. DISCUSSION.

a. The bumper replacement kit can be installed in four man hours by two personnel, MOS skill 3516. No deficiencies were noted with the hardware, installation instructions, and drawings comprising the bumper replacement kit.

b. Normal amphibious type lifting and loading operations using standard Marine Corps slings were conducted as follows:

(1) Utilizing the four lifting points on the subject vehicle, the replacement bumper kit and lifting shackles proved to be exceptionally sturdy during lifting and loading operations.

(2) Utilizing only one front lifting point and the two rear lifting points, the replacement bumper and lifting shackle were sturdy enough to suspend the vehicle. However, the vehicle tended to roll over due to its

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inherent balance characteristics. This listing is particularly evident when the left front lifting point is utilized in a three point lift and could permit a hazardous condition to develop when the vehicle is lifted in this manner.

(3) Helicopter crews reported a marked improvement in the transportability and handling characteristics of the vehicle. Significant improvement in the flight characteristics and in the ease of landing of the vehicle equipped with the replacement bumper kit was experienced.

c. During winching and towing tests, simulating a vehicle immobilized in mud and sand, the replacement bumper and towing shackles proved to be exceptionally sturdy.

d. After completion of each portion of the test, an inspection of all welds, lifting and towing shackles, frame adapters and bolts was conducted. No evidence of any deformation, bending or imminent rupture was found.

e. Additional advantages realized from the replacement bumper kit are:

(1) Since the replacement bumper kit is approximately 4 inches further in front of the vehicle than the present bumper, it affords better protection to the fording shutter and headlights during lifting and loading operations.

(2) The replacement bumper provides the two front legs of the standard Marine Corps slings with clearance to preclude contact with the hood of the vehicle. This will eliminate frequent damage experienced during amphibious loading and helicopter transport operations on vehicles equipped with the present bumper.

#### 4. CONCLUSIONS.

a. That the replacement bumper provides adequate lifting capability with standard Marine Corps slings and is a marked improvement over the present bumper.

b. That no deficiencies exist in the hardware, installation instructions, and drawings contained in the bumper replacement kit.

#### 5. RECOMMENDATIONS.

a. That the subject bumper replacement kit be considered acceptable and that a retrofit program on the Truck, Utility, 1/4-Ton, 4X4, M422/M422A1 be initiated to provide the bumper replacement kit for all M422/M422A1 vehicles in the Marine Corps inventory.

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b. That a change to modify the vehicle dimensions, as published in applicable technical publications, be issued to reflect an increase in vehicle length of 4 inches.

c. That Project 46-65-08 be terminated.



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Deputy Coordinator

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